Impact of Tariff and Protectionism on Egypt: Overviewing the Egyptian – European Union Association Agreement

Mayar Bakeer¹, Dr. Hebatallah Ghoneim²

¹, ² German University in Cairo – GUC, Egypt

ABSTRACT

In a world promoting free trade, trade policies should be designed to help increase economic welfare. Egypt is one of the countries with great prospective to economically excel and prosper; nevertheless, it is still categorized as a developing one. The European Union association agreement was one of the main agreements that helped the tariff rates within the Egyptian economy decrease gradually till almost approaching zero. Such trade liberalization is expected to increase the welfare. The purpose of this paper is to evaluate the effect of the changes in the tariff rates imposed by the EU-EUAA Agreement and the consequences it will have on Egyptian welfare. A Computable General Equilibrium model will help mimic the tariff rates of the agreement. The paper uses the Global Trade Analysis Project (GTAP) to perform the simulations and calculate the welfare through the equivalent Variation. An unemployment shock is added to the model. The results showed that the higher the trade liberalization, the lower the consumer welfare which is mainly attributed to the low export level within the country and high inflation. The research also highlights the impact of unemployment on the Egyptian welfare amidst the lowering tariff rates.

JEL classification: D58, F13, F14, F15

Keywords: CGE Simulation, Trade Policy, EU, Unemployment, Consumer Welfare

1. Introduction

Expansion of international trade has always been one of the main concerns for developed and developing economies. The World trade organization has been negotiating has been encouraging trade liberalization to enhance the economies of the world, usually though decreasing or eliminating the formal forms of protectionism including tariffs (Zaki C., 2010). Egypt has faced many different trade policies and reforms in order to help improve the economic status. The Egyptian-European Union Association Agreement (E-EUAA) was one of the main agreements that aimed at decreasing the tariff rates gradually to zero with a concentration on the agricultural and manufacturing sector. The trade agreement is expected to increase the consumer welfare in Egypt; but this could clash with the ongoing
governmental policies and direction and cause a distortion in the welfare causing a counter effect (Salvatore, 2007) (Konan & Maskus, 2000).

Previous literature discussed the effect of tariff rates on developing countries, however very few tackled the Egyptian economy and even less talked about specific trade agreements and how they would have an impact on the welfare. The purpose of this study is to investigate the effect of the E-EUAA on the Egyptian welfare putting the unemployment rate into account. The model will be simulated through a Computable General Equilibrium (CGE) using the Global Trade Analysis Program (GTAP) Database. The gradual decrease in tariff rates are introduced as different shocks within the model, dividing them into 3 scenarios.

The results showed that the decrease in tariff rates cause a fall in the GDP and this was attributed to the declining aggregate exports due to the low quality of Egyptian goods unable to compete in the international market. The research also showed the influence of unemployment, the impact of the high figure does not change with the tariff rates, however they do cause a change in the final output changing the magnitude and direct caused by decreasing tariff rates.

The paper is organized as follows; an overview on the tariffs and protectionism followed by an overview on the Egyptian-European Association Agreement. The next section will focus on previous researched that used GTAP and CGE, and then comes the model specifications and a description of the scenarios. The results will be portrayed in the third section accompanied by the conclusion and policy implications.

1.1. Overview on Tariffs and Protectionism

Trade policies can be one of the factors that may cause the rise or the fall of an economy; since they affect the production and the goods available within a country and to what it extent would it depend on itself or others, so therefore they should be well planned and regulated (Noll, 1997).

Protectionism occurs when a government wants to make an industry yield high income and profits through protecting it from foreign competitors; to help secure equal competition for domestic firms against international ones which may drive them out of the market (Altschiller, 1988). Not to mention it’s one of the main sources of government revenue affecting the welfare in the economy whether the consumer or the producer (Salvatore, 2007). Nevertheless, relaxing the policies and allowing a smoother flow of goods and services within the economy helps exporters and producers open foreign markets and obtain its profits, in addition to the fact that it increases the competition and drives the import prices low which is always for the welfare of the consumer (Feraboli, 2007). Lowering protectionism helps achieving economies of scale easier when applied to small countries that have no influence over world price; since competition is reduced, enhancing profits and increasing market entry in addition to increasing economic growth (Wacziarg & Welch, 2003) (Salvatore, 2007)
Tariffs are one of the main tools for protectionism. The philosophy behind imposing a tariff is that it makes the prices of the taxed commodity higher than the world price and therefore decreasing its demand making the producers better off if they do not import. This gives a chance for the domestic product to compete and increase its production, which will help in gaining experience and enhance technology used within the country and increase welfare (Capie, 1994) (Salvatore, 2007).

When a tariff is applied to a small country that has no influence on the world price, distortions in the economic welfare occur for consumers and producer which this is usually eliminated through increasing free trade. Yet when governments efficiently rotate their revenues within the economy (usually through subsidizing public consumption) this helps decrease the burden on consumers which increases the economic welfare. On the other hand there are arguments which encourage tariffs especially for large countries that influence the world price; In this case the tariff will increase the income within the economy like the case of oil exporting countries. (Salvatore, 2007) (Konan & Maskus, 2000).

Today the world is all about free trade as it encourages economic prosperity and development. Therefore, some researchers argue that protectionism could lead to the isolation of a country and may reach to the extent of starting a war (Miller, 1996). On the other hand, others debate that protectionism is one of the methods that induce growth. Sometimes it helps stimulate the current economic status by embarking upon employment or protecting an infant industry in order to grow and become a self-sustaining manufacturing entity of its own and then economic growth may occur (Altschiller, 1988).

Egypt is one of the countries with great prospective to economically excel and prosper given its natural resources and unique geographical position between the continents of the world. (Ikram, 1980). Nevertheless throughout the years beginning from the early 60’s Egypt faced various trade policy orientations with diverse rules and consequences leaving it with a 4.3% GDP growth and exports representing 10.35% of the GDP as of 2016, categorizing the country as a developing one according to the World Bank (World Databank, 2018) (Kheir el Din, 2008).

1.2. The Egyptian- European Mediterranean Association Agreement (E-EU AA)

Egypt has always had good trade relations with the EU since the 1970’s. Licari (1997) mentioned that one of the main sectors of which Egypt would do trade with the EU is the agriculture; since Egypt is blessed with perfect farming conditions, it has always been an essential part of the GDP scoring a rough 14% in 2010. (Licari, 1997) (World Databank, 2018)

In 1995 the Egyptian Tariffs were as high as 25.1% rocketing to 40.9% in 2002. Since the EU agreement was executed in 2004; the tariffs decreased by 25% and decreasing by a further 19% in 2005. The agreement denoted full exemption of custom duties and an application of an ad valorem tariff to all agricultural products exported from Egypt. Whilst for the EU exports to Egypt, elimination of custom duties and a tariff reduction by 5% after two years from the agreement, 15% after three years from the agreement and by 25% after four years from the agreement then 0% tariff rate on all
other duties hereon. (EU Agreement, 2004) (Elshennawy, 2012). Such trade liberalization is expected to increase the welfare in Egypt. Nevertheless it could clash with the governmental policies since a decrease in the government revenue will occur due to a deficiency in protectionism; so whether the welfare will actually increase or not is trivial (Feraboli, 2007) (Burfisher, 2011) (Bandara, Computable General Equilibrium Models for Development Policy Analysis in LDCs, 1991).

The research question tackled by this paper is, ‘What is the impact of the terms of the E-EUAA and on the Egyptian economy and welfare?’ since it had a drastic change in the Egyptian tariff rate. The answer to these questions will be through the Computable General Equilibrium that will enable simulation of the scenarios for the E-EUAA trade policies mimicking a liberalized trade economy and a more protected economy; then measuring its impact on the Egyptian welfare, as there is no guarantee for the potential gains from trade liberalization.

The Global Trade Analysis Project (GTAP) database and GCE model will be used to calculate Egypt’s welfare through the equivalent variation (Burfisher, 2011). The equations and figures used on the model are provided by the GTAP. The database includes information about the Egyptian economy in terms of the flows of goods and services in a benchmark year to consolidate the social accounting matrix that is the basis to compute the CGE. The GTAP bears into account the following factors: National GDP, savings, government expenditure, private consumption, investment, exports and imports.

2. GTAP Previous Findings

Several reasearches were done using CGE models through the Global Trade Analysis Project (GTAP) to model for various factors including trade liberalisation.

(Siddiqui, 2007) The author was testing the effect of full and partial liberalization of rice and agricultural trade on economic welfare and poverty in Pakistan. A computable general equilibrium was conducted using GTAP to segregate the labor to agricultural and non-agricultural. The proxies observed were the equivalent variation for welfare and the Foster—Greer – Thorbecke indicies for poverty. The research showed that the higher the liberalization of rice and agricultural trade the better off Pakistan’s economic welfare and poverty indices in the short and long run with an emphasis on households, specifically Farm Households.

(Ralf & Vanzetti, 2012) Mexico went through various trade reforms that ended up with high poverty rates and unemployment and high imports, the research highlights the association of the NAFTA with the lower agricultural output from Mexico which consequently affects the other previously mentioned economic factors. The other uses a CGE approach using GTAP to test the effect of having alternative policies which protect the agricultural sector and observe the outcome on the welfare, trade and production. The results showed that increasing the distortion will improve the output, employment and exports of the agricultural sector but would have an opposing effect on the rest of the economy.
(Zaki C., 2010) The researcher attempts to model trade facilitation of the world economy in a dynamic CGE model using the GTAP with a multi-regional and multi-sectoral model (MIRAGE). The model adjusts the ad valorem equivalents. The research showed that mainly Africa and Asia specifically The Middle East and North Africa benefited from the facilitation more than the developed regions.

(Diao & Somwaru, 2000) The researchers use an intertemporal global multi-sector general equilibrium model to test the dynamic effects of the free trade area of the Americas FTAA on the western hemisphere countries. The researchers used the GTAP to observe the effects on saving – investment capital accumulation and the correlation between trade liberalization and economic growth. The results show that the welfare doesn’t change when trade is majorly done with countries outside the western hemisphere, more or less all developing countries in the region will yield welfare gains. Also the results show that the FTAA effects on the US and Canada are low nevertheless the motive for investment in nearby countries for US and Canada seem to be strong.

2.1. The Model

The Global Trade Analysis Project (GTAP) database and GCE model will be used to calculate Egypt’s welfare. The equations and figures used on the model are provided by the GTAP. The database includes information about the Egyptian economy in terms of the flows of goods and services in a benchmark year to consolidate the social accounting matrix that is the basis to compute the CGE. The GTAP bears into account the following factors: National GDP, savings, government expenditure, private consumption, investment, exports and imports.

The model is a neo-classical one with an open economy for three regions, which are Egypt, European Union (EU) and the Rest of the World (ROW). The production activities in the economy are aggregated into 3 sectors Agriculture, Manufacturing and Services, with three factors of production Land, Labour and capital. (Burfisher, 2011). The factors of production will have a Leontief fixed proportions production function where the factors are perfect compliments for each other; in addition to a Constant Elasticity Substitution (CES) where the factor substitution elasticity is constant at 1. The three factors of production are given full mobility within the model (Feraboli, 2007).

Currency is neutral and normalized since Egypt is a price taker with no effect on world price (Zaki C., 2010). Concerning the production activity, perfect competition is assumed and a Cobb Douglas nested production function will be the mould for the model, where there are three sectors incorporated within the production function. As for the demand, using an Armington import aggregation function; where the preference of domestic vs. foreign goods will be decided according to the relative price of the goods. This will minimize their costs and maximize the utility given their income constraint. Having that said, the demand will also have CES attributes. (Burfisher, 2011)
The model is calibrated on the 2007 Social Accounting Matrix (SAM) for Egypt that is provided by the Global Trade Analysis Project which, contains the aggregate values for the Egyptian economy and activities.

### 2.2. Description of scenarios

The EU agreement terms will be exhibited in this paper by playing with the tariff rates of imports into Egypt and the EU distinctly through three scenarios. Each scenario examines the agricultural and industrial reforms for both Egypt and the EU separately.

The tariff rates simulated for each country is determined according to the initial EU agreement tariff rate decrease then gradually decreasing the rates for each scenario until all rates are demolished. All imports to the EU from Egypt whether agricultural or industrial goods will have a 0% rate since the execution of the agreement.

According to Burfisher, 2011 unemployment is a serious problem that cannot be ignored. In order to reflect more realistic outcomes, since Egypt has a 15% unemployment rate as of 2017 which cannot be ignored and full employment will not be good enough to reflect the Egyptian reality. (World data Bank, 2017) (Burfisher, 2011).

Therefore an unemployment shock was added to the model for both countries, the unemployment rate was set to 15% for Egypt and 9.6% for the EU. (World data Bank, 2017)

#### 2.2.1. Scenario 1

The First scenario concerning is the least liberal of the three scenarios; the shocks will be as follows:

1. Import Tariffs on EU agricultural imports to Egypt will decrease by 5% (rTMS = -5%); denoted as “Egypt Agricultural Reform”
2. Import Tariffs on EU Manufacturing imports to Egypt will decrease by 50% (rTMS = -50); denoted as “Egypt Manufacturing Reform”
3. Import Tariffs on Egyptian agricultural imports to EU will be set to 0% (rTMS = 0); denoted as “EU agricultural reform”
4. Import Tariffs on Egyptian Manufacturing imports to EU will be set to 0% (rTMS = 0%); denoted as “EU manufacturing reform”

#### 2.2.2. Scenario 2

The second scenario will be more liberal than scenario 1 and it will involve the following:

1. Import Tariffs on EU agricultural imports to Egypt will decrease by 25% (rTMS = -25%); denoted as “Egypt Agricultural Reform”
2. Import Tariffs on EU Manufacturing imports to Egypt will decrease by 75% (rTMS = -75); denoted as “Egypt Manufacturing Reform”
3. Import Tariffs on Egyptian agricultural imports to EU will be set to 0% (rTMS = 0); denoted as “EU agricultural reform”
4. An Ad valorem on Egyptian Manufacturing imports to EU will be set to 0% (rTMS = 0%); denoted as “EU manufacturing reform”

2.2.3. Scenario 3
This is the most liberal scenario. With 0% custom duties the application of the following shocks to the model will occur:
1. Import Tariffs on EU agricultural imports to Egypt will be set to 0% (rTMS = 0); denoted as “Egypt Agricultural Reform.”
2. Import Tariffs on EU Manufacturing imports to Egypt will be set to 0% (rTMS = 0); denoted as “Egypt Manufacturing Reform”
3. Import Tariffs on Egyptian agricultural imports to EU will be set to 0% (rTMS = 0); denoted as “EU agricultural reform”
4. Import Tariffs on Egyptian Manufacturing imports to EU will be set to 0% (rTMS = 0); denoted as “EU manufacturing reform”

3. Simulation Results
The simulation results are divided into 3 scenarios; 1 being the least liberal and 3 is the most. The base is based on the tariff rates before the EG-EU agreement. Within each scenario the outcome is expressed through the total impact, tariff impact and unemployment impact; this will help assess the effect of each factor separate from the other.

Table 1: Welfare (Equivalent Variation) Results

<table>
<thead>
<tr>
<th>Factor/Scenario</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (%)</td>
<td>Tariff shock</td>
<td>Unemp shock</td>
</tr>
<tr>
<td>Welfare (EV)</td>
<td>-6462.09</td>
<td>-122.19</td>
<td>-6339.9</td>
</tr>
</tbody>
</table>

Table 1 shows that the welfare for the Egyptian economy has a negative sign, which reflects a decrease from the base run (Burfisher, 2011), which could be attributed to the increasing prices of goods and declining quantities (Mankiw N. G., 2004). However, looking at the effect of the tariffs on the model; the liberalization of tariff caused the welfare to decrease almost by 6.1% from the initial run. When splitting the welfare to measure the impact of the tariff shock and unemployment shock individually; the tariff shock caused a 103.3% decrease while the unemployment shock caused a 3.4%
increase. Although the unemployment represents 90% of the welfare decomposition nevertheless the decrease caused by the tariff shock prevails.

Table 2: GDP Results

<table>
<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total (%)</td>
<td>Tariff shock</td>
<td>Unemp shock</td>
</tr>
<tr>
<td>GDP Price Index</td>
<td>1.18</td>
<td>-0.32</td>
<td>1.50</td>
</tr>
<tr>
<td>GDP Quantity Index</td>
<td>-5.21</td>
<td>0.03</td>
<td>-5.24</td>
</tr>
</tbody>
</table>

The welfare is affected by changes in the quantity and prices of goods (Varian, 2010). Table 2 shows that the GDP price index which represents inflation shows a 62.7% decrease in the levels of inflation as the tariffs fall from the initial run. It is worth mentioning that the impact of unemployment on the inflation doesn’t change with the liberalization but its effect has a higher influence on the whole inflation level. The tariff shock causes a decrease to the rates which escalates as the tariffs approach 0% but the low impact on the overall inflation causes the unemployment shock effect to crowd out the deflation caused by tariffs.

On the other hand, the GDP quantity index is decreasing which explains the outcome of the welfare; this change could be attributed to the increase in prices of goods and services. The decrease in tariffs rate resulted in a 2.3% decrease in the quantity of goods in the GDP. Most of the impact on the GDP quantity index is due to unemployment, although it does not change with liberalization.

<table>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total (%)</td>
<td>Tariff shock</td>
<td>Unemp shock</td>
</tr>
<tr>
<td>Labor Demand</td>
<td>-41.4</td>
<td>1.99</td>
<td>-43.4</td>
</tr>
</tbody>
</table>

Table 3: Demand on goods and services
Table 3 shows the elements concerned with demand on goods and services, for all three components the unemployment shock does not change when decreasing the tariff rates. Domestic output increased by 2.39% which is mainly influenced by the tariff shock, nevertheless unemployment has a negative effect on the domestic output making the total impact of the variable negative.

As for the labor demand although the effect of unemployment counterbalances the positive values yielded by the tariff, the total value exhibits an increase as the liberalization increases. The increase in labor demand is due to the increase in the domestic output. On the other hand, the domestic sale of goods has decreased from the base run and continues to decrease as tariffs approach zero by 10.42%. The unemployment shock accounts for almost 95% of the value of the total impact.

Table 4 shows the output for trade. Aggregate imports increased by 11.6% with the liberalization of trade. The unemployment shock has no effect on the change in aggregate imports nevertheless its value accounts for over 100% of the total impact. The tariff shock has a positive impact, but accounts for almost 14.7% therefore it caused the increase in the change of aggregate imports but the high weight of the unemployment shock caused offset the positive effect of tariffs turning the total shock to negative.

<table>
<thead>
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<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (%)</td>
<td>Tariff shock</td>
<td>Unemp shock</td>
</tr>
<tr>
<td>Aggregate Imports</td>
<td>-12.24</td>
<td>-1.81</td>
<td>-14.3</td>
</tr>
<tr>
<td>Market Price of Imports</td>
<td>-1.82</td>
<td>2.08</td>
<td>-0.01</td>
</tr>
<tr>
<td>Aggregate Exports</td>
<td>-27.30</td>
<td>-8.79</td>
<td>-18.51</td>
</tr>
<tr>
<td>Exports Price</td>
<td>0.67</td>
<td>-0.18</td>
<td>0.85</td>
</tr>
<tr>
<td>Change in trade balance ($US mil)</td>
<td>853.71</td>
<td>-687.08</td>
<td>1540.79</td>
</tr>
</tbody>
</table>

Table 4: Results for Trade

The market price of imports is decreasing which justifies the increased import demand which is unaffected by unemployment since the import demand substitution is elastic.
Investigating the exports, the demand and prices decreased by almost 26.9%, and this decrease was mainly a result of the decreased tariffs. The price of exports increase from the base run, therefore the positive value.

However, as the tariff rate decreases and approaches zero, export prices also decrease. On the other hand the aggregate exports are also decreasing although the decreased price, they are less than the base run and continue to deteriorate as the tariff rate falls which may be attributed to the insufficient quality of Egyptian exports, which was also mentioned in the World Bank Middle East Studies Report that Egypt needs world class goods capable of international competition, skilled labor force and relative export prices (Yang, 1998).

The trade balance (exports – Imports), depicted a 20% decrease as the tariff rate approaches zero. The tariff shock accounts for 96.6% of the impact on the total which reflects the magnitude of the change in export and import volume. The fall in trade balance is due to the decreased exports demand.

4. Conclusion and policy implications

The importance of trade liberalization has always been emphasized worldwide for developing and developed countries to increase economic welfare; this includes the reduction or elimination of formal forms of protectionism including tariffs. Egypt was involved in several trade agreements including the Egyptian- European Union association agreement which targeted the tariff rates of the agricultural and manufacturing sector.

This paper aims to study the effect of the E-EUAA on the Egyptian welfare and test whether it will increase the welfare as expected or would it cause a counter effect. A computable general equilibrium was implemented to see the impact of a change in the tariff rates according to the agreement making it approach zero, and how it would cause the welfare to change taking into consideration the unemployment rate. The simulation showed that as trade liberalization increases, the welfare of the Egyptian economy decreases; which is mainly due to a fall in the gross domestic product caused by the lower tariff rates. With further investigation the drop in the GDP was due to a decrease in the aggregate exports, although the exports prices are decreasing; this may be caused by the lack of high quality goods in the Egyptian market incapable of competing internationally therefore affecting the GDP.

Results emphasized the effect of unemployment on the economy. The high rates of unemployment did not change with the different tariff rates; nevertheless, the impact made by the shock was significant enough to affect the total impact value especially the welfare, the labor demand, change in trade balance and the aggregate imports.

The study highlights some outcomes for policymakers when it comes to tariff reduction/elimination. In the case of Egypt, special strategies would be needed to liberalize trade by starting with the quality of the Egyptian goods available for export and encourage the domestic production. Recommendations for future research include using a dynamic model to further investigate the effect
of the trade liberalization policies on the long run with different shocks to the model that includes government subsidies to see the counteracting effect of the tariffs. Using a more recent SAM would definitely yield interesting outputs.

5. References


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